

## ABSTRACT

1 A data acquisition and telemetry based control system for use in facilitating  
2 substantially real time management of an agricultural irrigation system. The soil  
3 moisture sensor includes a reader and a plurality of probes. The probes each include an  
4 electronic circuit having a moisture sensing capacitor in operative communication with  
5 the soil whose moisture is to be measured. Each probe also includes a receive/transmit  
6 antenna and the reader includes a transmit/receive antenna, so that as the reader passes  
7 near the probe, the reader transmits a digital excitation signal to the electronic circuit of  
8 the biodegradable probe via an inductive couple formed between the transmit/receive  
9 antenna of the reader and the receive/transmit coil of the probe. The electronic circuit  
10 uses an energy component of the excitation signal to generate a digital data signal which  
11 indicates the moisture content of the soil adjacent to the moisture sensing capacitor. The  
12 probe sends the data signal to the reader which then uses the data signal to develop a  
13 corresponding set of watering instructions which are then transmitted to a control module  
14 in communication with the irrigation system. The control module sends corresponding  
15 control signals to nozzles of the irrigation system causing the irrigation system to disperse  
16 water in a manner consistent with the moisture content data transmitted by the probes to  
17 the reader. Because the irrigation system moves continuously through the field to be  
18 irrigated, the moisture content data acquisition and resultant water dispersal by the  
19 irrigation system occur substantially in real time.

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